

Fig. 1

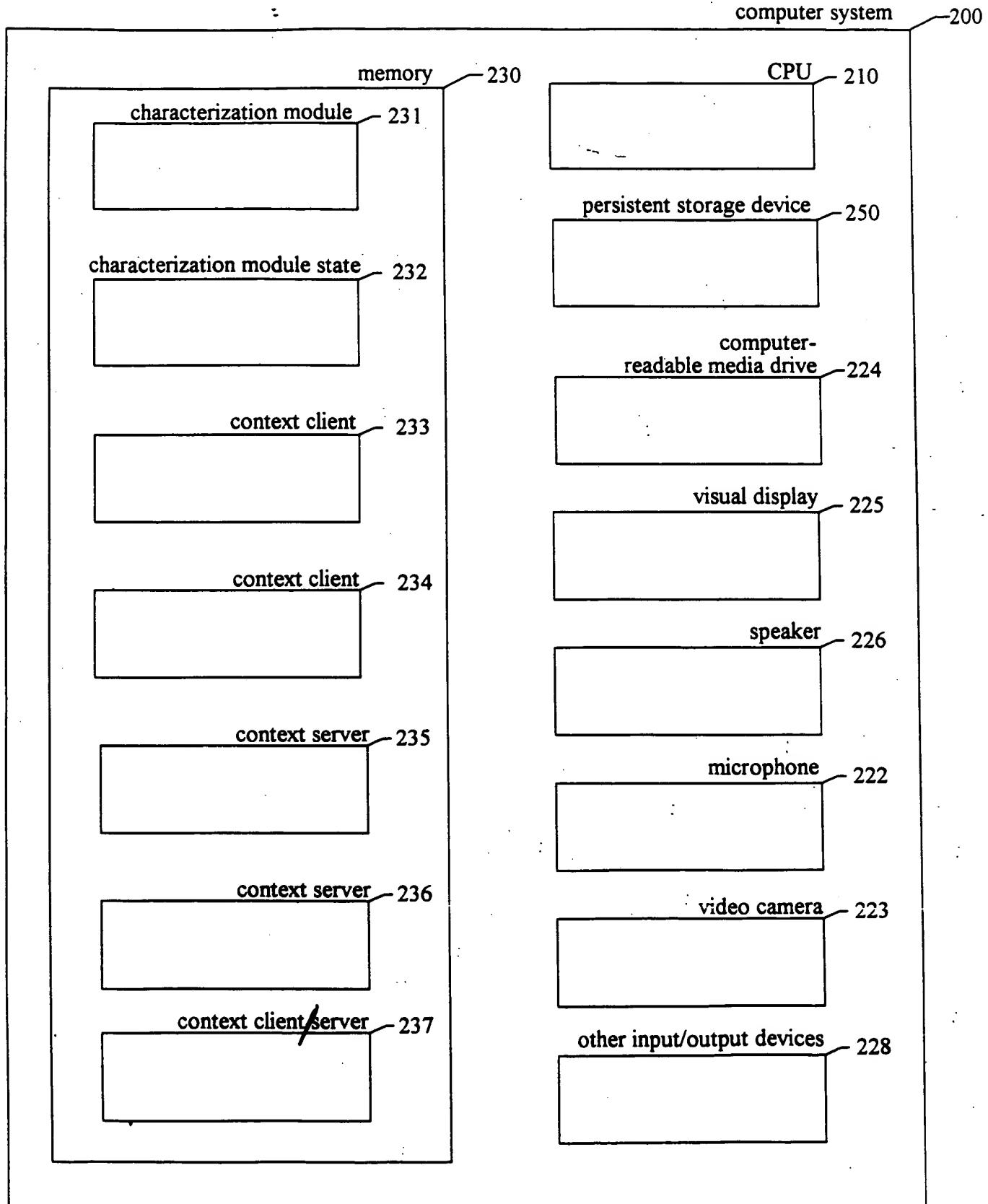
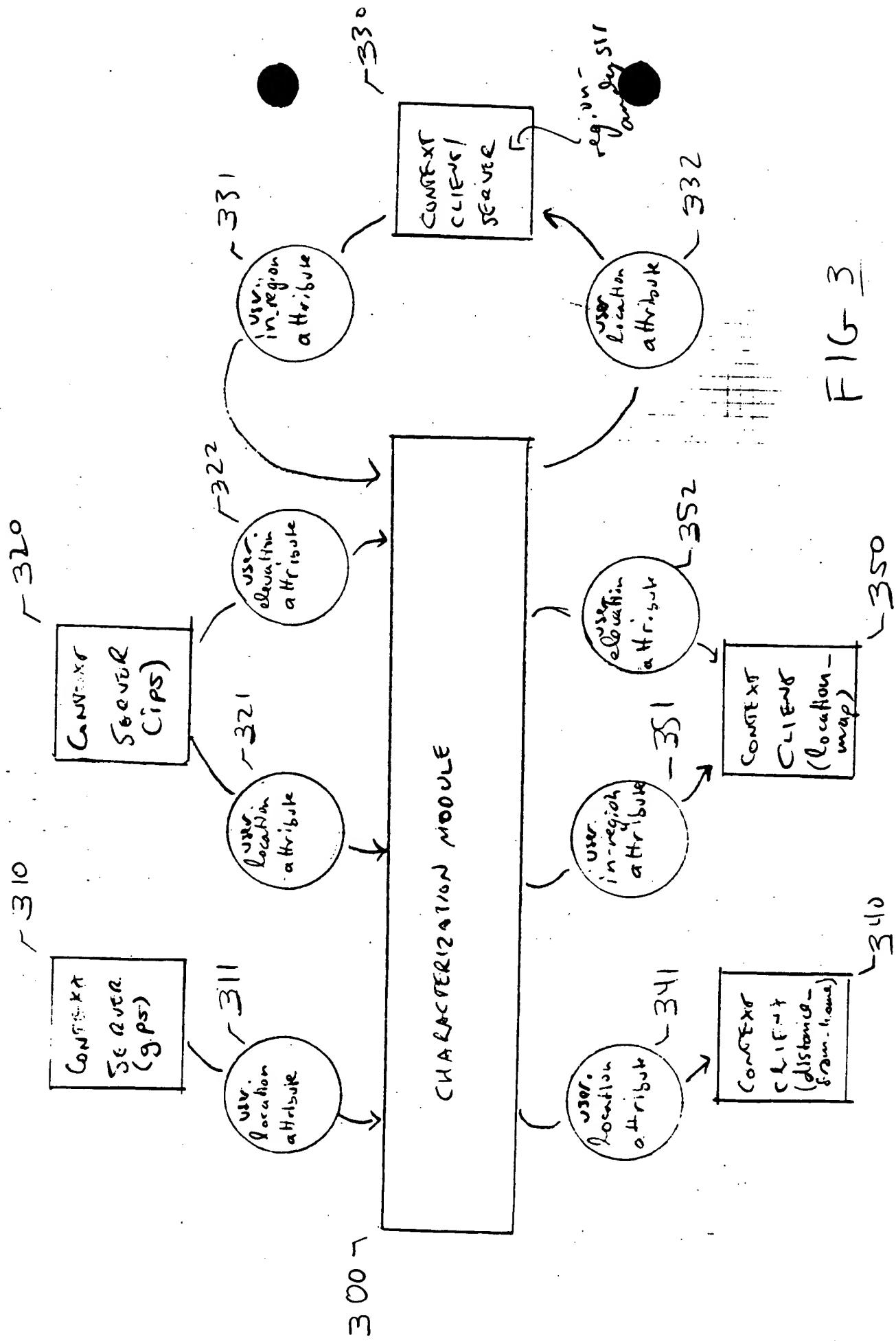


Fig. 2



403

context server name	version	installation date	filename	request handler
gps	1	2/10/2000	gps.exe	(reference)
ips	1	2/21/2000	ips.exe	(reference)
location_region_analysis	1	2/10/2000	l_r.a.exe	(reference)

415

413

FIG 4

412

411

504

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38' 73" N, 122° 18' 43" W	0°.09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38' 745" N, 122° 18' 424" W	0°.021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22	.5	13:11:01.118 2/22/2000	meters	1
user.in_region	location_region_analysis	none	none	none	none	0

517

516

FIG 5

512

511

513

-600

context client table		message handler
location map		(reference)
distance from home		(reference)
region analysis		(reference)

601
602
603

FIG 6

611 612

700
701
702
703
704

attribute instance table		units	number of context clients consuming
attribute name	context server name	value	uncertainty
user.location	gps	47° 38.73' N, 122° 18.43' W	0°.09' 2/22/2000
user.location	ips	47° 38.745' N, 122° 18.424' W	0°.021' 2/22/2000
user.elevation	ips	22	.5
user.in_region	location_region_analysis	none	none

711 712 713 714

715 716 717

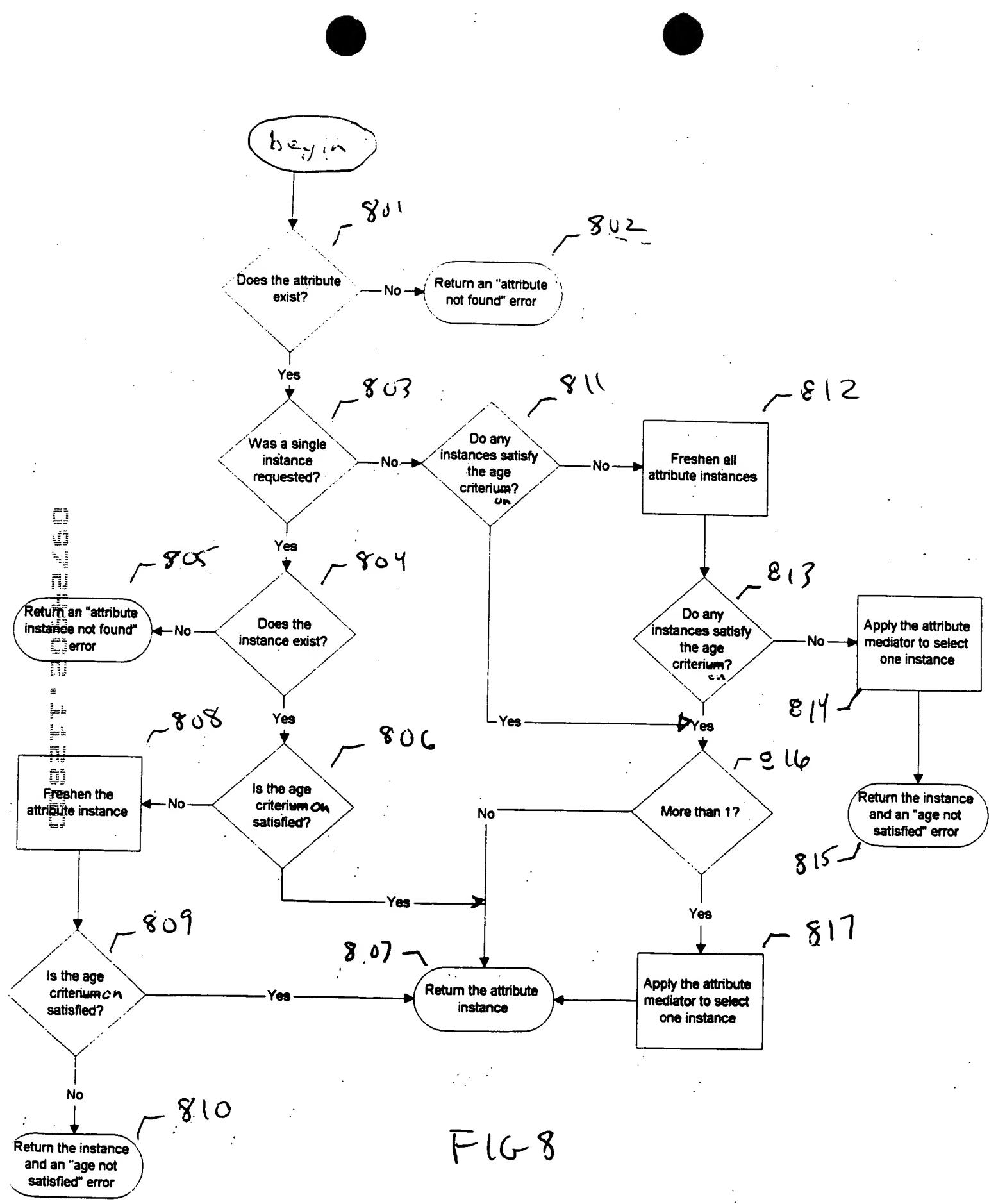


FIG 8

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900

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° .09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° .021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22.25	.5	13:11:06.565 2/22/2000	meters	1
user.in.region	region.analysis	none	none	none	none	1

901 ↘ 911 ↘ 912 ↘ 913 ↘ 914 ↘ 915 ↘ 916 ↘ 917

FIG 9

900

condition table

condition name	context client name	first logical parameter	second logical parameter	comparison value	logical operator
in.region.true	region.analysis	user.in.region	none	TRUE	=

1001 ↘ 1011 ↘ 1012 ↘ 1013 ↘ 1014 ↘ 1015 ↘ 1016 ↘ 1017

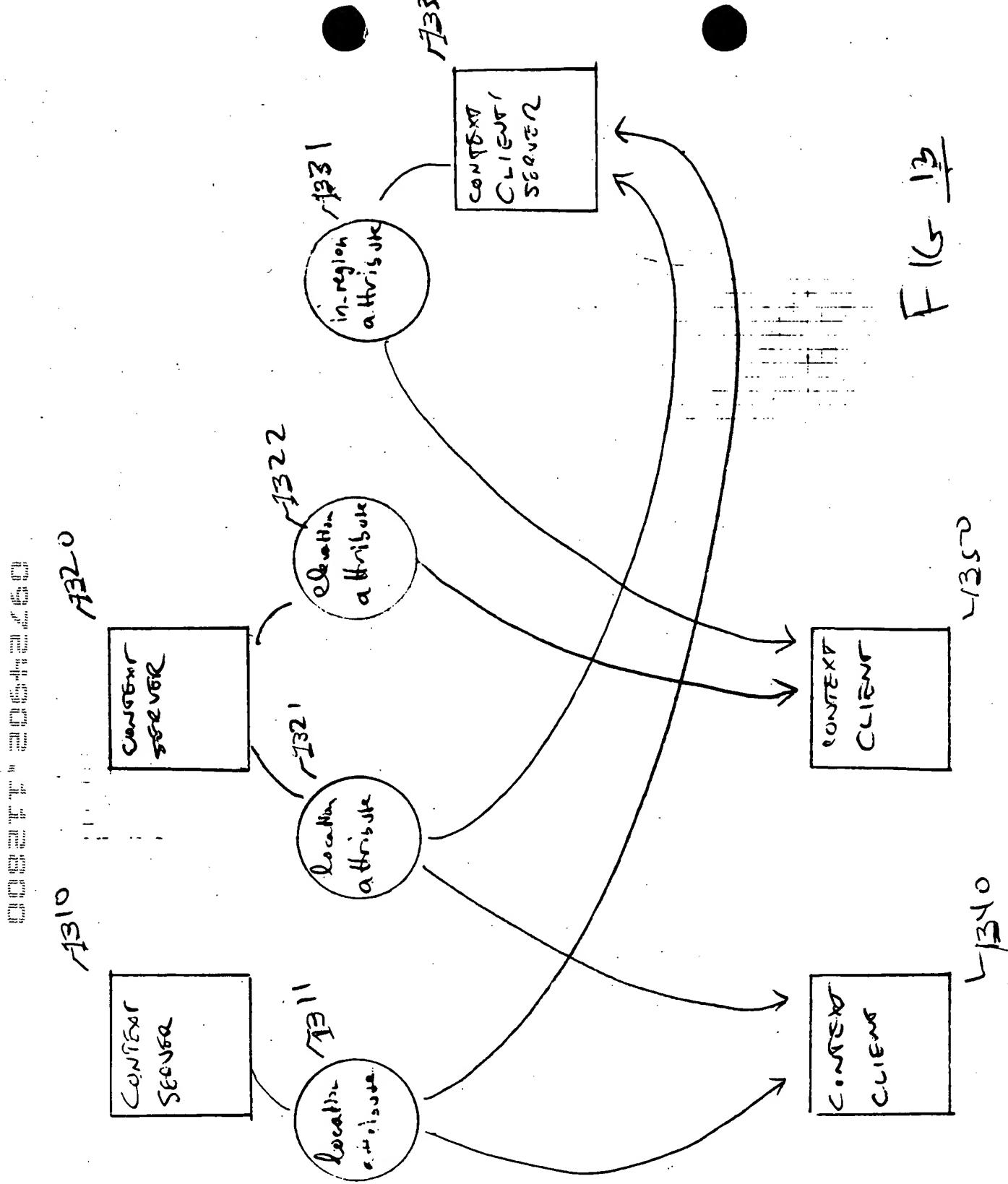
FIG 10

condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundary_crossed	region_analysis	in_region_true	TRUE or FALSE	30	13:11:29.101 2/22/2000	(reference)	no

101 ↘ 111 ↘ 112 ↘ 113 ↘ 114 ↘ 115 ↘ 116 ↘ 117 ↘ 118
FIG 11

condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundary_crossed	region_analysis	in_region_true	TRUE or FALSE	30	13:11:59.101 2/22/2000	(reference)	yes

1201 ↘ 1211 ↘ 1212 ↘ 1213 ↘ 1214 ↘ 1215 ↘ 1216 ↘ 1217 ↘ 1218
FIG 12



attribute request table

attribute name	context client name
user.location	distance_from_home
user.in_region	location_map
user.location [gps]	location_region_analysis
user.elevation	location_map

Figure 14

1411

1412

User.

Desired_privacy_level
Interruptibility
Speed
Direction
Acceleration
Availability.
 Cognitive_availability
 Tactile_availability
 Manual_availability
 Visual_availability
 Oral_availability
 Auditory_availability
Proximity.<Item or place name>

Mood.

 Happiness
 Sadness
 Anger
 Frustration
 Confusion

Activity.

 Driving
 Eating
 Running
 Sleeping
 Talking
 Typing
 Walking

Location.

 Place_name
 Latitude
 Longitude
 Altitude
 Room
 Floor
 Building
 Address
 Street
 City
 County
 State
 Country
 Postal_Code

Destination. (same as User.Location.)

Physiology.

 Pulse
 Body_temperature
 Blood_pressure
 Respiration

Person.<name or ID>. (same as User.)

Platform.**UI.**

 Oral_input_device_availability
 Manual_input_device_availability
 Tactile_output_device_availability
 Visual_output_device_availability
 Auditory_output_device_availability

Platform. (continued)

CPU.
 Load
 Speed
Memory.
 Total_capacity
 Used

Storage.
 Total_capacity
 Used

Connectivity.
 Connection_status
 Connection_speed
 Connection_type/device
 Connection_activity

Power.
 Power_source
 Power_level

Environment.**People.**

 Nearest
 Number_present
 Number_close

Local.

 Time
 Date
 Temperature
 Pressure
 Wind_speed
 Wind_direction
 Absolute_humidity
 High_forecast_temperature
 Low_forecast_temperature
 People_present
 Ambient_noise_level
 Ambient_light_level
 Days.<previous or future>
 High_temperature
 Low_temperature
 Precipitation_type
 Precipitation_amount

Place.<place name>. (same as Environment.Local)

Application.**Mail.**

 Available
 New_messages_waiting
 Messages_waiting_to_be_sent

Phone.

 Available
 In_use
 On/off
 Notification_mechanism
 Call_incoming
 Caller_ID

Sound_recorder.

 Available
 Recording

Fig. 15

1) User Setting

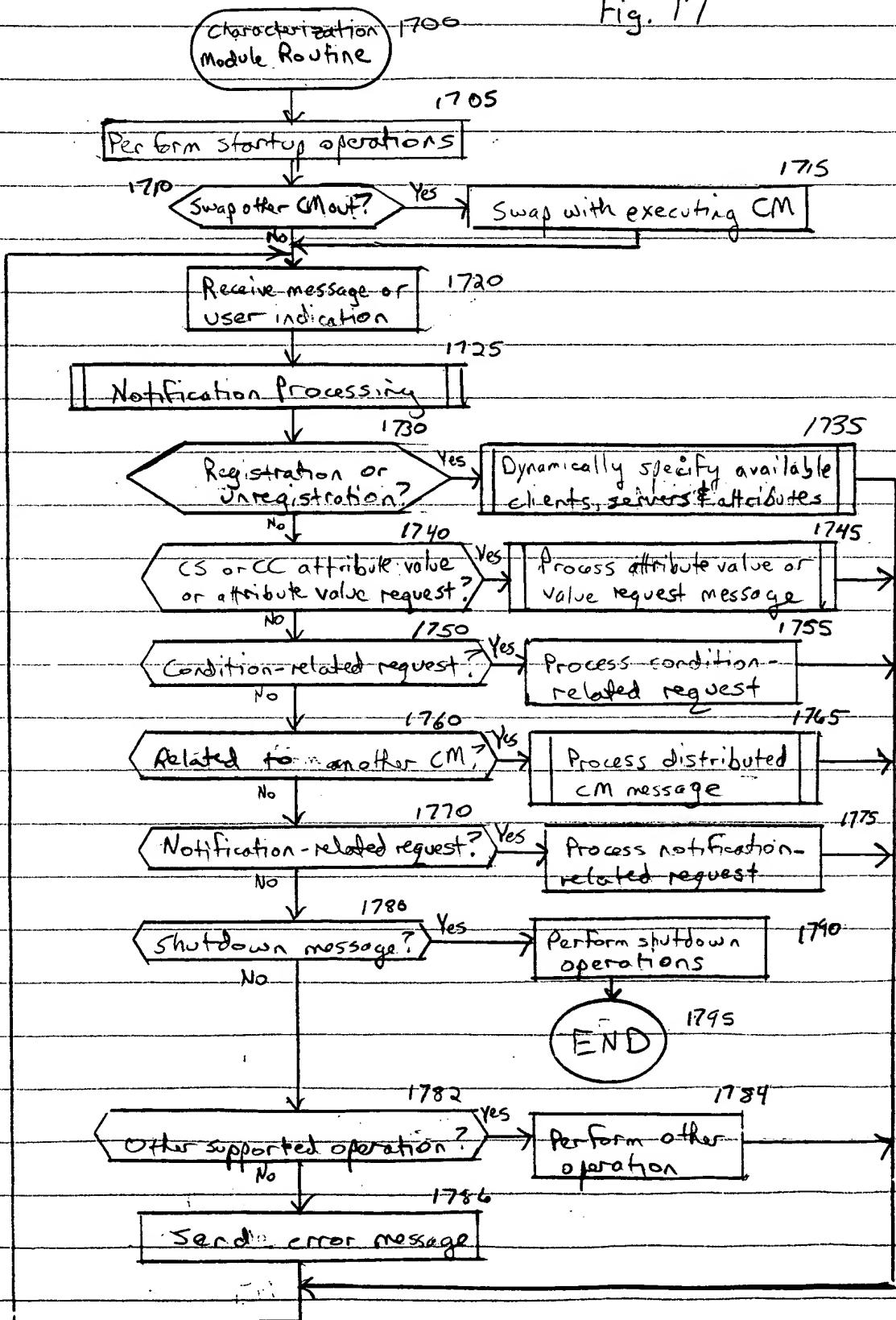
- a) Mental Context
 - i) Meaning
 - ii) Cognition
 - (1) Divided User Attention
 - (2) Task Switching
 - (3) Background Awareness
 - iii) Solitude
 - iv) Privacy
 - (1) Desired Privacy
 - (2) Perceived Privacy
 - v) Social Context
 - vi) Affect
- b) Physical Situation
 - i) Body
 - (1) Biometrics
 - (2) Posture
 - (3) Motion
 - (4) Physical Encumbrment
 - (a) Senses
 - (i) Eyes
 - (ii) Ears
 - (iii) Tactile
 - (iv) Hands
 - (v) Nose
 - (vi) Tongue
 - (b) Workload demands/effects
 - (c) Interaction with computer devices
 - (d) Interaction with people
 - (e) Physical Health
 - ii) Environment
 - (1) Time/Space
 - (2) Objects
 - (3) Persons
 - (a) Audience/Privacy Availability
 - (i) Scope of Disclosure
 - (ii) Hardware affinity for privacy
 - (iii) Privacy Indicator for User
 - (iv) Privacy Indicator for Public
 - (v) Watching Indicator
 - (vi) Being Observed Indicator
 - (4) Ambient Interference
 - (a) Visual
 - (b) Audio
 - (c) Tactile

2) Computer

- a) Power
- b) Configuration
 - i) User Input Systems
 - (1) Hand/Haptic
 - (a) Keyboard/Keystrokes
 - (2) Voice/Audio
 - (3) Eye Tracking
 - (4) Cursors
 - (a) Axis
 - (b) Resolution
 - (i) Selection
 - (ii) Invocation
 - (c) Accelerators
 - ii) Output Systems
 - (1) Visual
 - (a) Resolution
 - (2) Audio
 - (a) Public/Private
 - (3) Haptic
 - iii) External Resources
 - (1) I/O devices
 - (2) Connectivity
 - c) Data
 - i) Quantity/State
 - ii) Urgency/Importance
 - (1) Use of Prominence
 - iii) Modality
 - iv) Sensitivity/Purpose
 - (1) Privacy Issues
 - (2) Use of Association
 - (3) Use of Safety
 - v) Source/Ownership
 - (1) Types
 - (a) User generated
 - (b) Other computers or people
 - (c) Sensor
 - (d) PC State
 - (2) Use of Association

Fig. 16

Fig. 17



Notification
processing
Subroutine

1725

Fig. 18

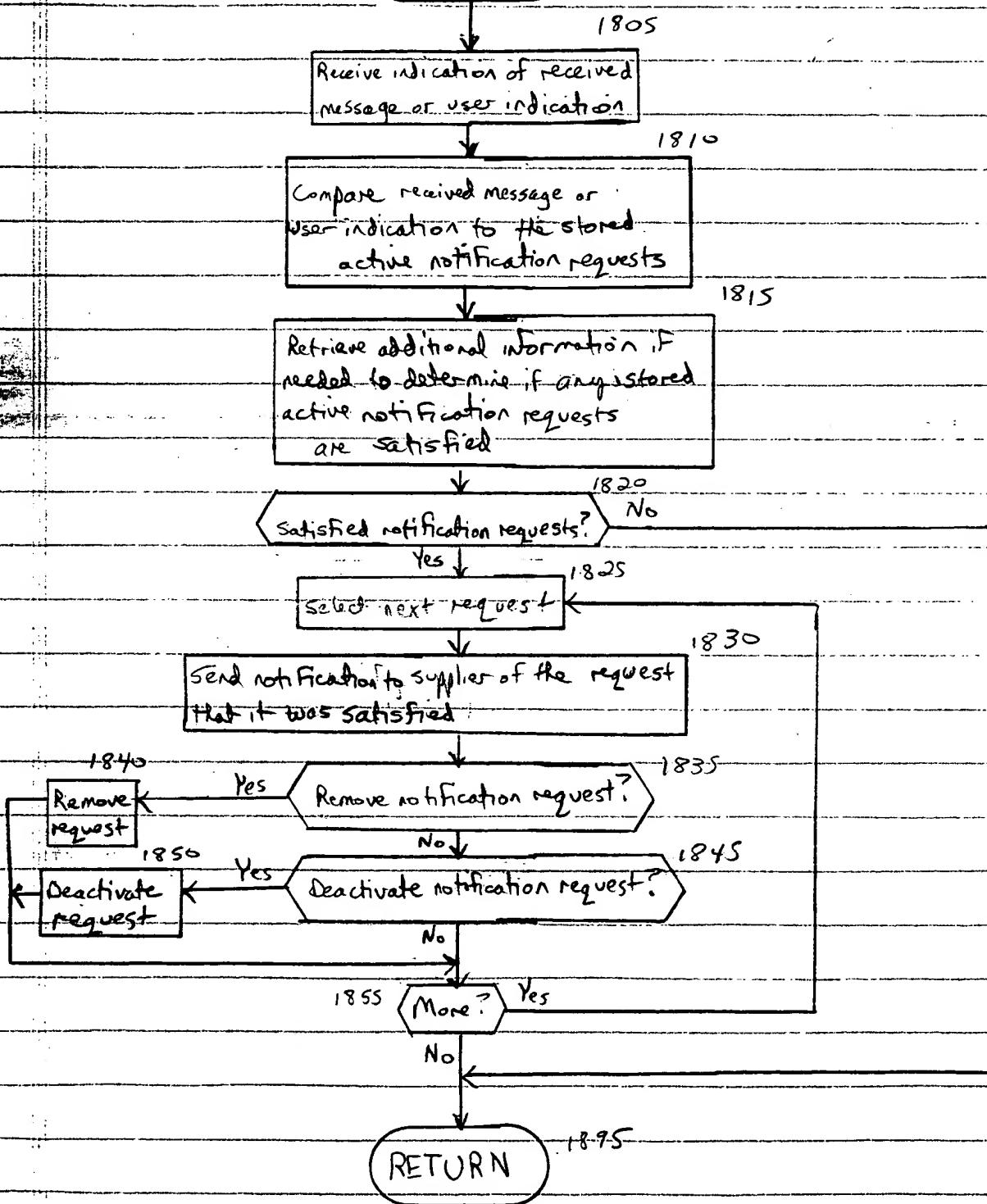
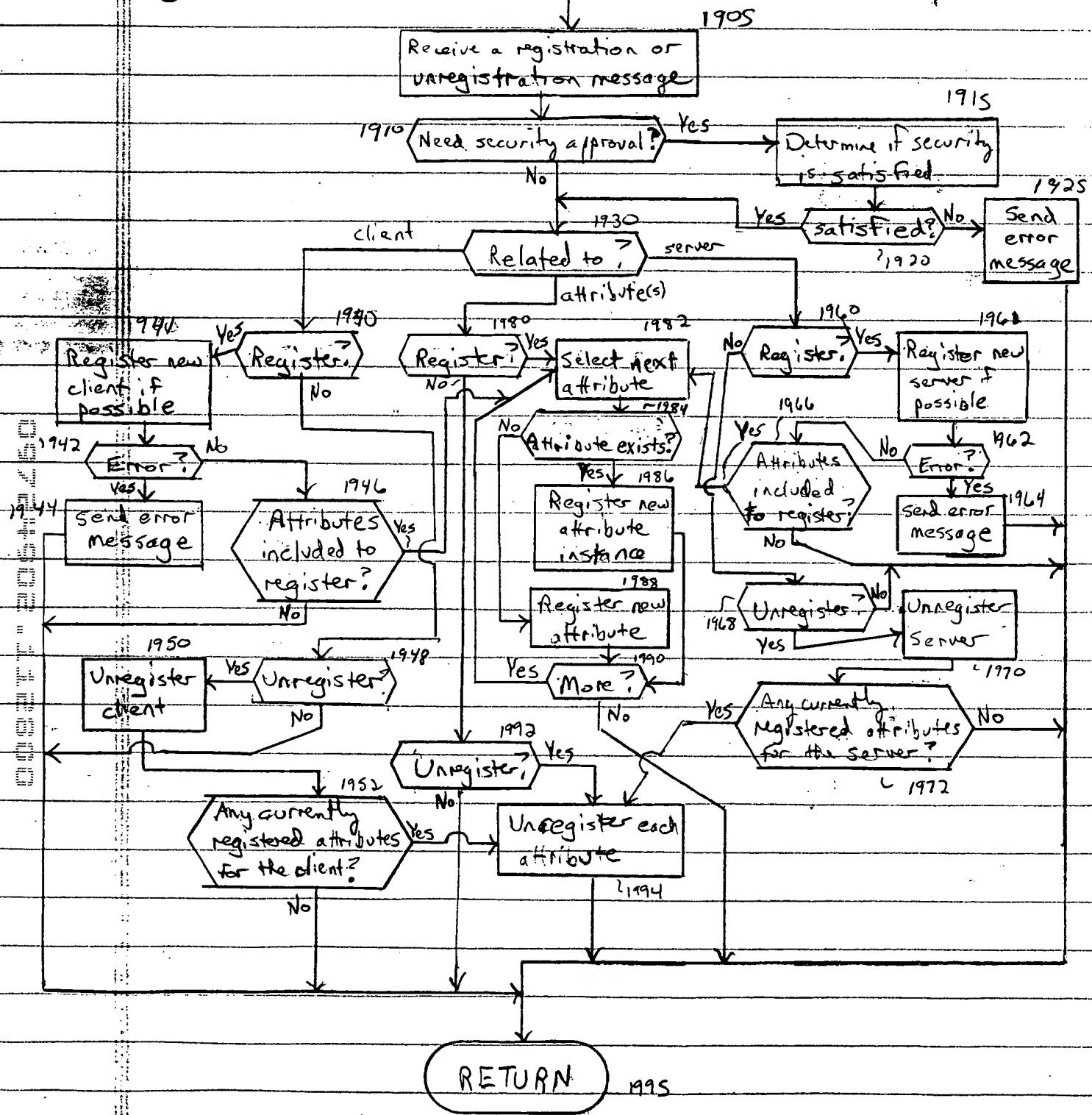


Fig. 19

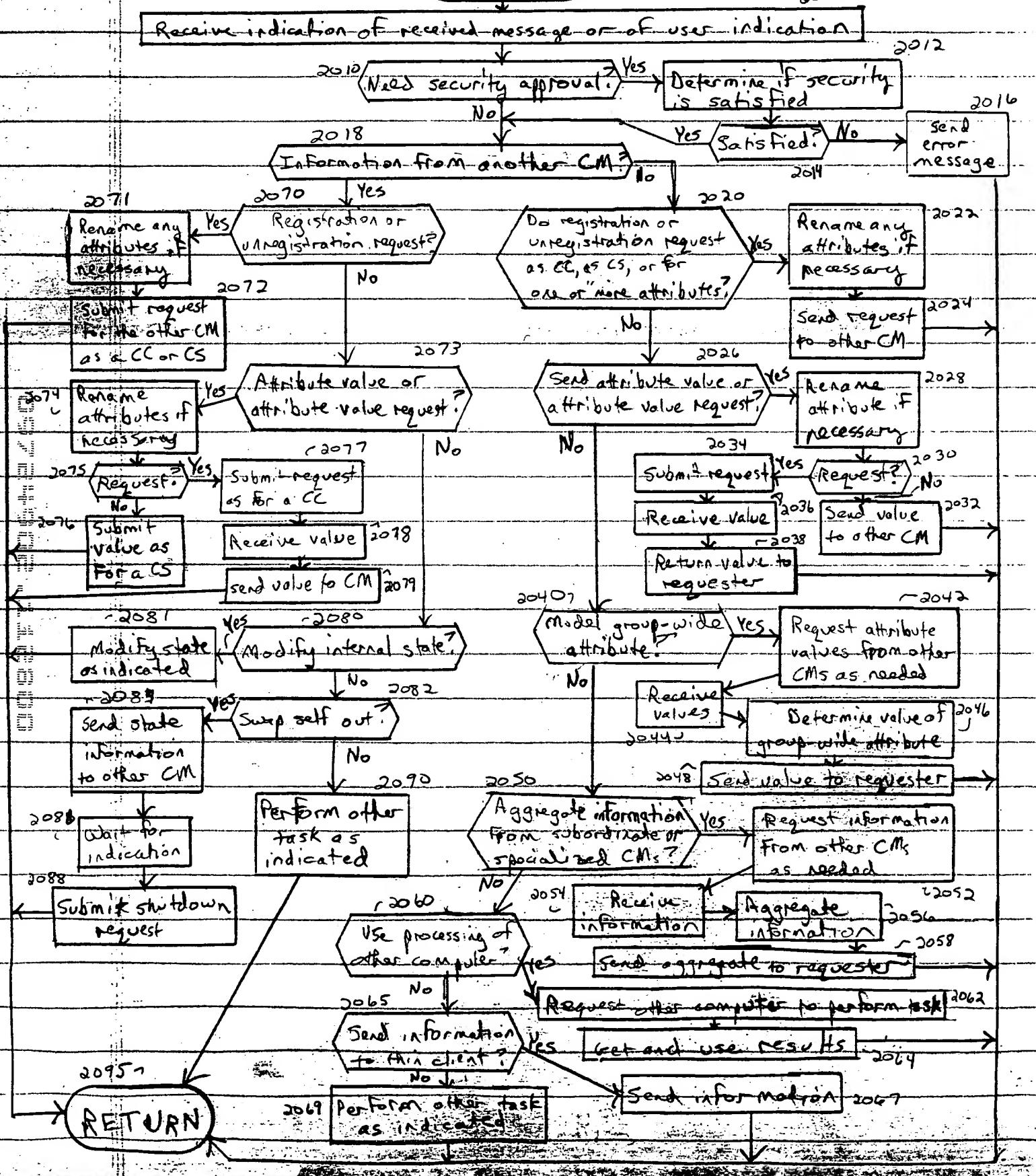
Dynamically Specify Available
Clients, Servers, & Attributes
Subroutine 1735



process Distributed
CM Message
Subroutine

1765

fig. 20



Process Attribute Value
On Value Request Message
Subroutine

1745

Fig. 21

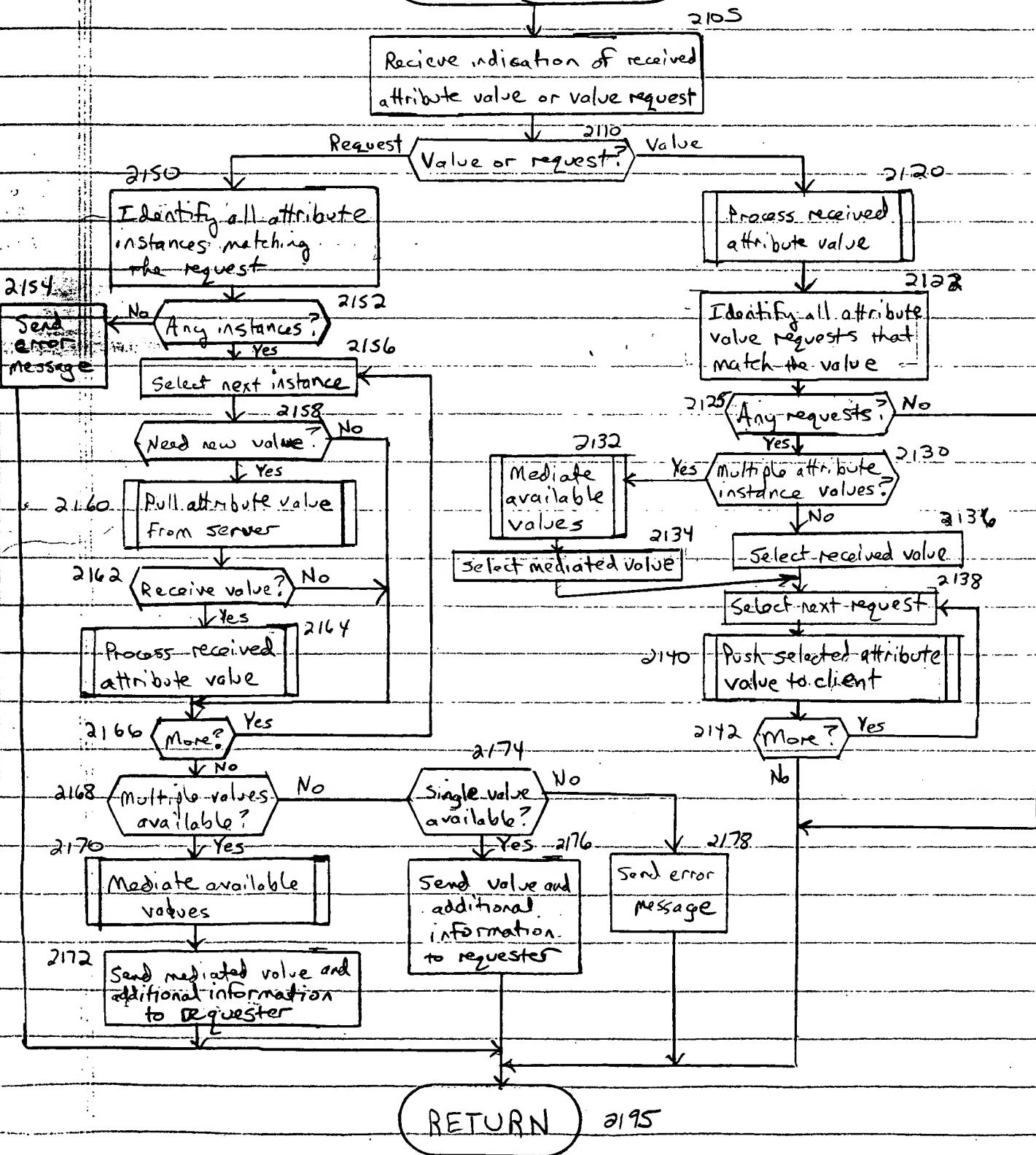


Fig 22

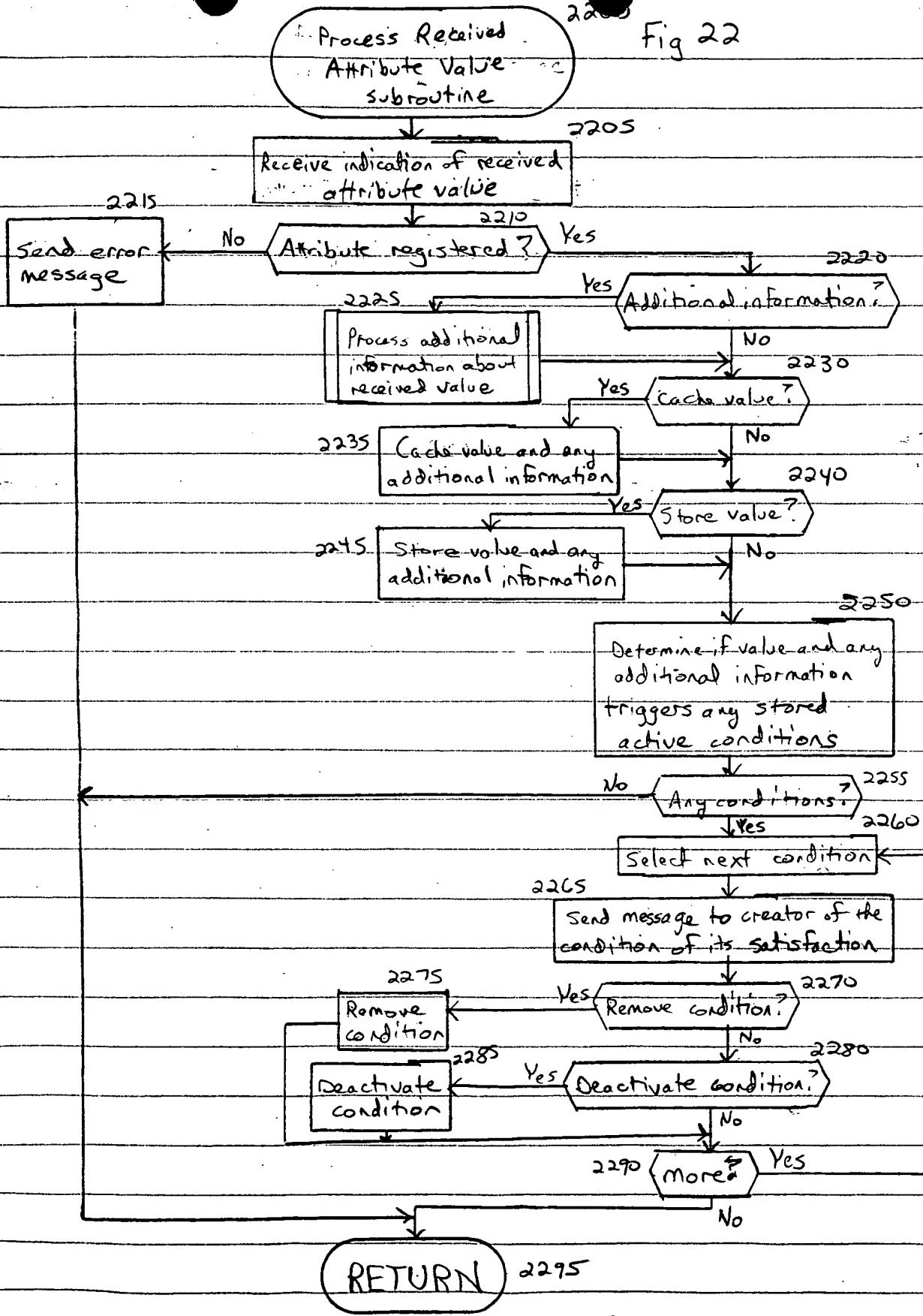


Fig. 23

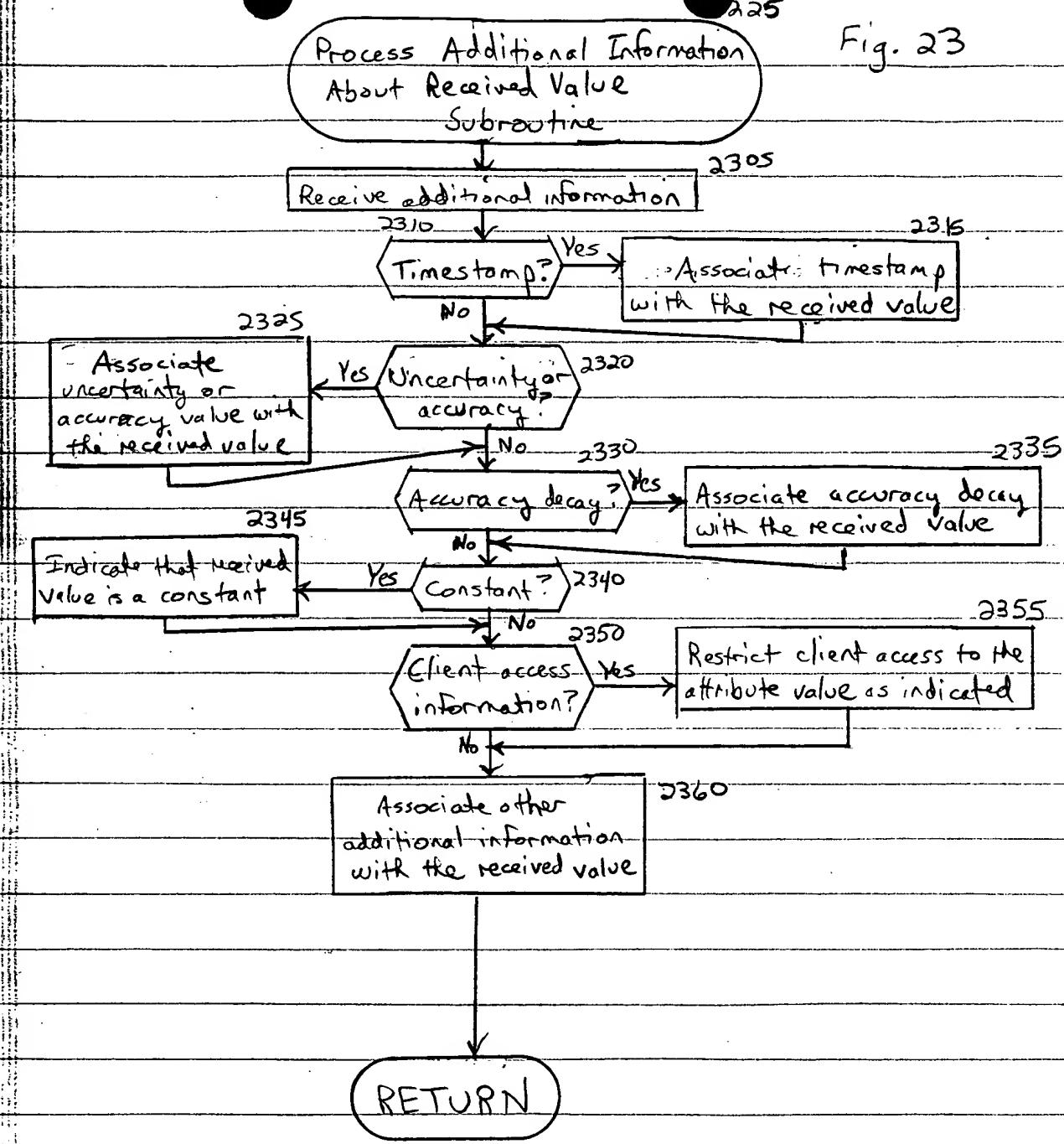
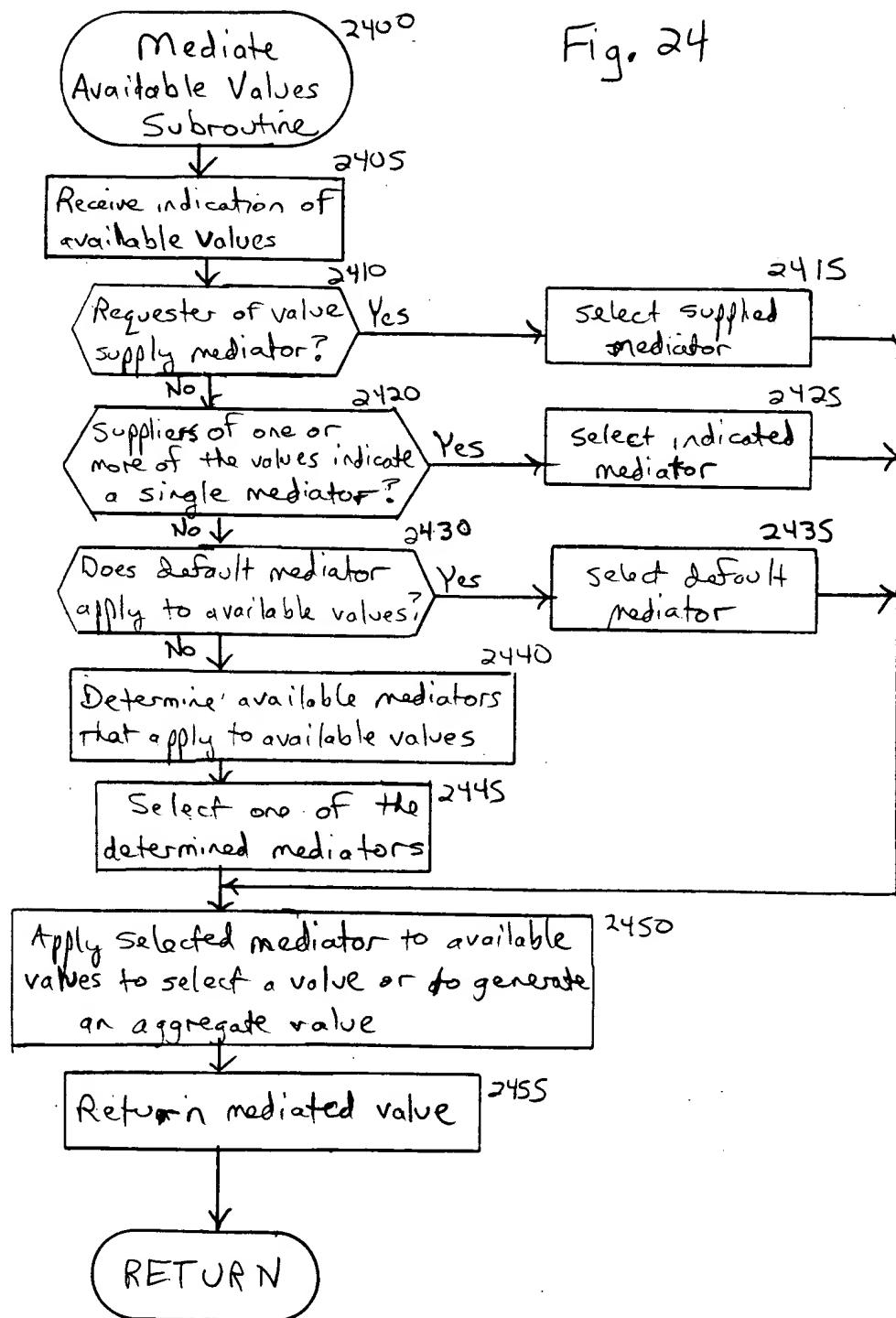
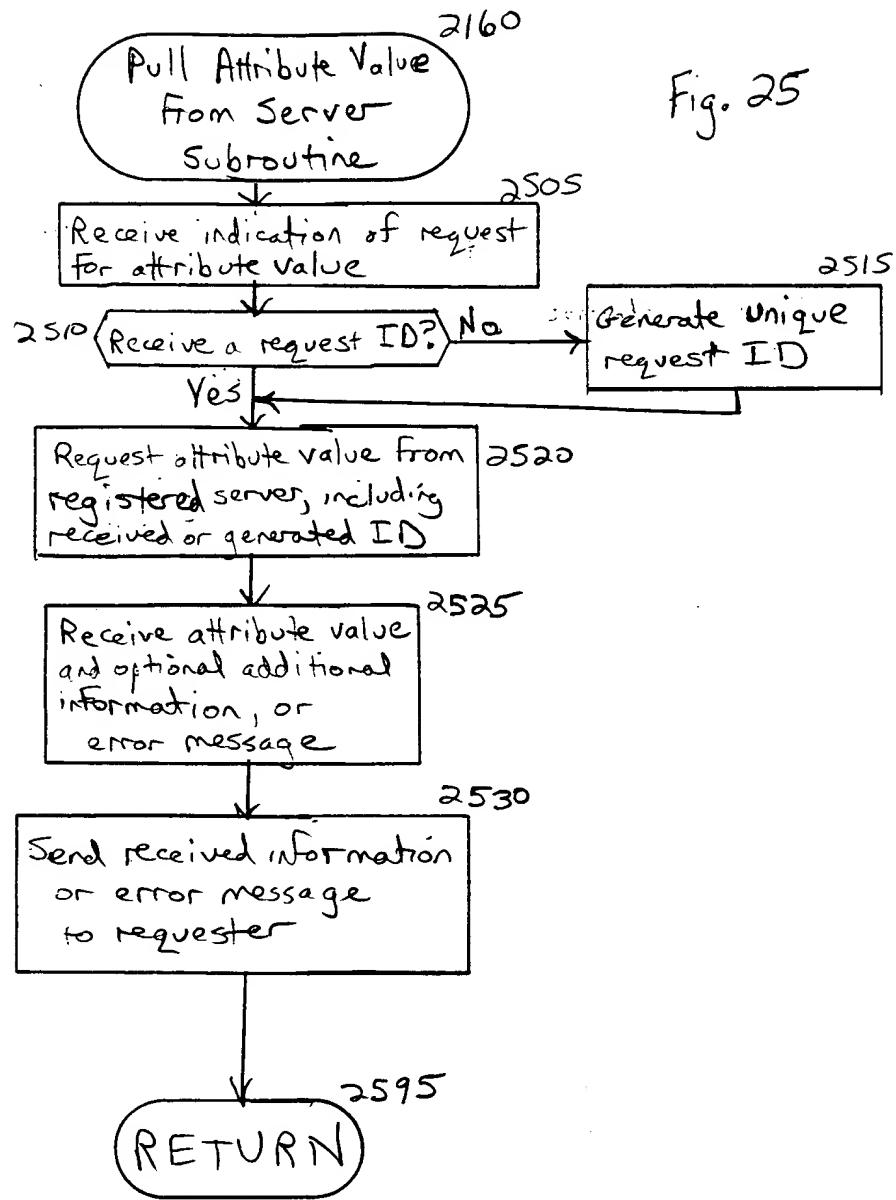


Fig. 24





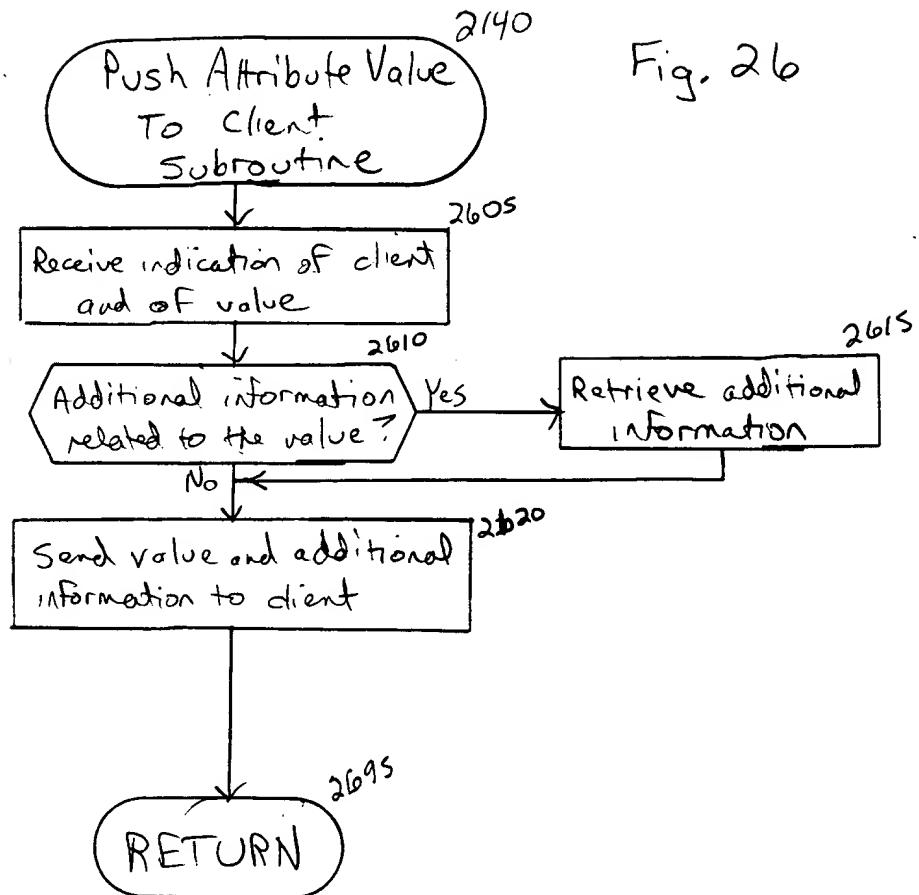


Fig. 27

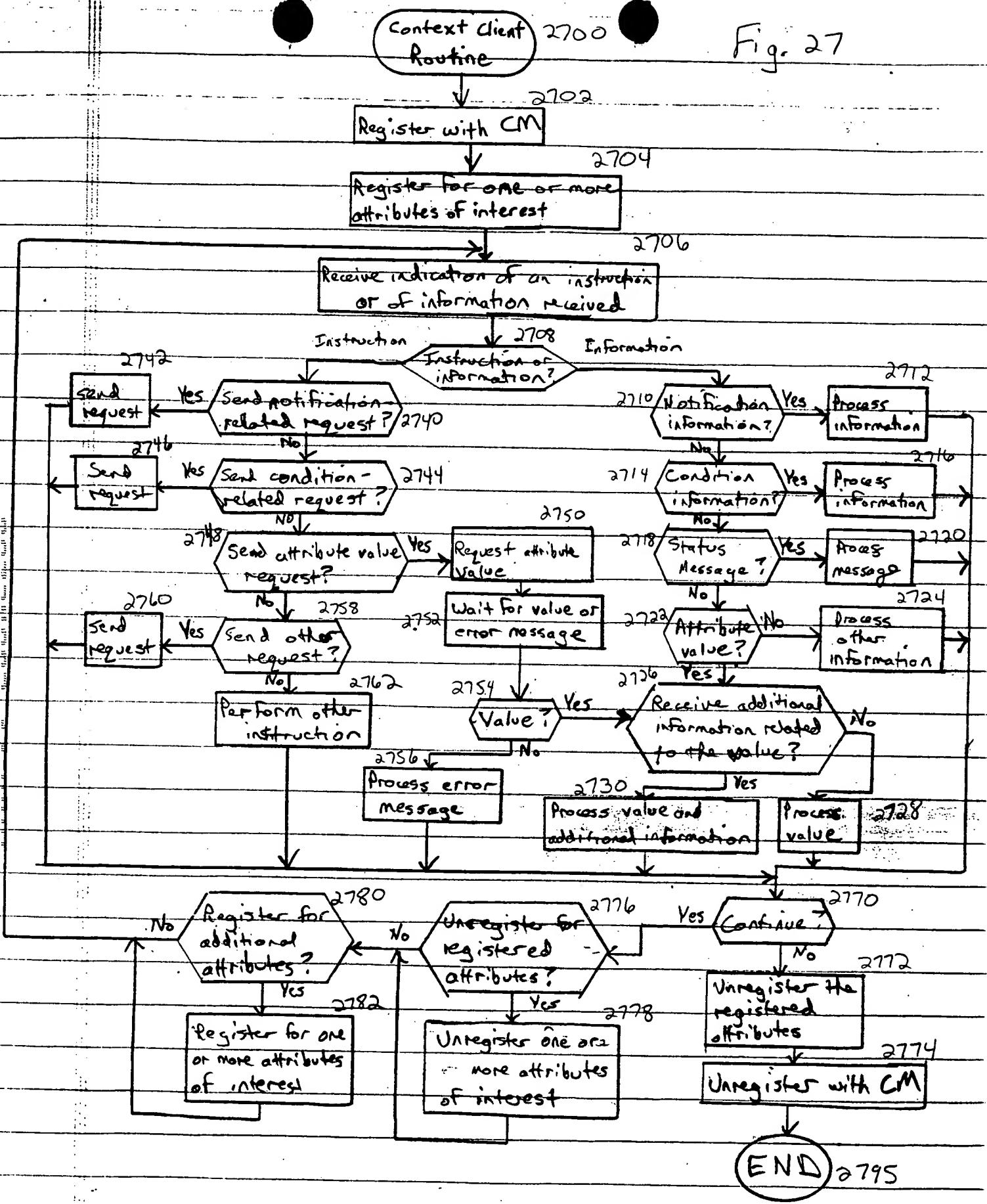


Fig. 28

